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CLAIMS

1. A supported molecularly imprinted polymer,  
c h a r a c t e r i s e d in that it is obtainable by  
(a) providing a composition comprising a poly-  
merisation medium with at least one functional monomer, a  
5 template, a support, and a free radical initiator;

(b) polymerisation of the composition while con-  
fining the polymerisation to the surface of the support,  
thereby providing a molecularly imprinted polymer on the  
support;

10 (c) separation of the supported molecularly im-  
printed polymer from the polymerisation medium;

(d) removal of the template from the supported  
molecularly imprinted polymer;

(e) reuse of the polymerisation medium for pre-  
15 paring further supported molecularly imprinted polymer by  
repeating steps (a)-(d).

2. A supported molecularly imprinted polymer  
according to claim 1, wherein the polymerisation is con-  
fined to the surface of the support by confining the free  
20 radical initiator to the support.

3. A supported molecularly imprinted polymer  
according to claim 2, wherein the free radical initiator  
is bound or adsorbed to the surface of the support.

25 4. A supported molecularly imprinted polymer  
according to any one of claims 1-3, wherein the support  
is selected from the group consisting of porous and non-  
porous, planar and non-planar inorganic and organic  
supports.

30 5. A supported molecularly imprinted polymer  
according to any one of claims 1-4, wherein the support  
is a particle and the free radical initiator is an azo-  
initiator that is bound to the surface of the particle.

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6. A supported molecularly imprinted polymer according to claim 5, wherein the azoinitiator is bound to the surface of the particle by a two point attachment.

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5 7. A supported molecularly imprinted polymer according to any one of claims 1-4, wherein the initiator is an azo-bis-amidine initiator that is adsorbed to the surface of the support and is insoluble in the polymerisation medium.

10 8. A supported molecularly imprinted polymer according to claim 7, wherein the initiator is 2,2'-azo-bis(2-amidinopropane) or 2,2'-azobis(N,N'-dimethylene-isobutyramidine).

15 9. A supported molecularly imprinted polymer according to claim 1, wherein the polymerisation is confined to the surface of the support by subjecting the composition to microwave irradiation which selectively heats the support and thereby initiates a polymerisation reaction at the surface of the support.

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20 10. A supported molecularly imprinted polymer according to any one of claims 1-9, wherein the polymerisation on the support is repeated at least once with a different composition to obtain at least one further layer of a molecularly imprinted polymer; a layer of different polarity; or a layer of other functional properties.

25 11. A supported molecularly imprinted polymer according to any one of claims 1-10, wherein the template is selected from the group consisting of organic or inorganic molecule entities, ions, antibodies, antigens, amino acids, peptides, proteins, nucleotides, DNA-bases, carbohydrates, drugs, pesticides, and derivatives thereof.

35 12. A method for preparing a supported molecularly imprinted polymer, characterised by (a) providing a composition comprising a polymerisation medium with at least one functional monomer, a template, a support, and a free radical initiator;

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(b) polymerising the composition while confining the polymerisation to the surface of the support, thereby providing a molecularly imprinted polymer on the support;

(c) separating the supported molecularly imprinted  
5 polymer from the polymerisation medium;

(d) removing the template from the supported molecularly imprinted polymer;

(e) reusing the polymerisation medium for preparing further supported molecularly imprinted polymer by  
10 repeating steps (a) - (d).

13. A method according to claim 12, wherein the polymerisation is confined to the surface of the support by confining the free radical initiator to the support.

14. A method according to claim 13, wherein the free  
15 radical initiator is bound or adsorbed to the surface of the support.

15. A method according to claim 14, wherein the support is a particle and the initiator is an azo-initiator that is bound to the surface of the particle.

20 16. A method according to claim 15, wherein the azoinitiator is bound to the surface of the particle by a two point attachment.

17. A method according to claim 16, wherein the azoinitiator is the reaction product of glycidoxypentyl-  
25 trimethoxysilane (GPS) and azo-bis(cyanopentanoic acid) (ACPA).

18. A method according to claim 14, wherein the initiator is an azo-bis-amidine initiator that is adsorbed to the surface of the support and is insoluble  
30 in the polymerisation medium.

19. A method according to claim 18, wherein the initiator is 2,2'-azo-bis(2-amidinopropane) or 2,2'-azobis(N,N'-dimethyleneisobutyramidine).

20. A method according to claim 12, wherein the  
35 polymerisation is confined to the surface of the support by subjecting the composition to microwave irradiation

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which selectively heats the support and thereby initiates a polymerisation reaction at the surface of the support.

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21. A method according to any one of claims 12-20, wherein the polymerisation on the support is repeated at least once with a different composition to obtain at least one further layer of a molecularly imprinted polymer; a layer of different polarity; or a layer of other functional properties.

22. Use of a molecularly imprinted polymer according to any one of claims 1-11, or prepared according to any one of claims 12-21, in chromatography, for separations, in chemical sensors, in molecular recognition as stationary phase in capillaries, in selective sample enrichment or in catalysis.

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23. Azoinitiator as a means of carrying out the method of any one of claims 12-21, characterised in that it is the reaction product of glycidoxypropyltrimethoxysilane (GPS) and azo-bis-(cyanopentanoic acid) (ACPA).

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